

## CLAIMS

1. Thin film apparatus comprising:

a) a signal layer including at least one signal conductor deposited on a first surface of a dielectric substrate, wherein the signal conductor is defined by a plurality of symmetrical pathways that extend in adjoining relation to one another, wherein said plurality of pathways are positioned to electrically interact with each other, wherein one of the pathways is unbounded on one side by the others of said plurality of pathways and wherein said unbounded pathway exhibits a conductor width that is less than the conductor width of the others of said plurality of pathways;

b) a ground plane layer deposited on a second surface of said dielectric substrate; and

c) termination means for coupling electrical signals to said signal conductor and said ground plane conductor.

2. Apparatus as set forth in claim 1 wherein the spacing of said unbounded pathway to an adjoining one of said plurality of pathways is less than the spacings between the others of said plurality of pathways.

3. Apparatus as set forth in claim 1 wherein said signal conductor and said ground layer are sputtered onto a ceramic substrate.

4. Apparatus as set forth in claim 1 wherein said signal conductor comprises a plurality of serpentine windings that define a delay line.

5. Apparatus as set forth in claim 1 wherein a plurality of apertures extend through said substrate and are displaced about said signal layer and aligned to couple said signal conductor to said ground plane conductor.

1           6. Apparatus as set forth in claim 1 wherein said signal conductor defines a delay  
2 line.

1           7. Apparatus as set forth in claim 1 wherein said substrate comprises a flexible  
2 material and said signal conductor is partitioned such that said substrate can be folded  
3 during packaging.

1           8. Thin film apparatus comprising:

2           a) a signal layer including at least one signal conductor deposited on a first  
3 surface of a dielectric substrate, wherein the signal conductor is defined by a coiled  
4 pathway having a plurality of windings that extend in parallel relation to one another,  
5 wherein one of said plurality of windings is unbounded on one side by the others of said  
6 plurality of windings, wherein said unbounded winding exhibits a conductor width that is  
7 less than the conductor width of the others of said plurality of windings and wherein the  
8 spacing of said unbounded winding to an adjoining one of said plurality of windings is  
9 less than the spacing between the others of said plurality of windings;

10          b) a ground plane layer deposited on a second surface of said dielectric substrate  
11 to substantially cover the second surface; and

12          c) termination means for coupling electrical signals to said signal conductor and  
13 said ground plane conductor.

1           9. Apparatus as set forth in claim 8 wherein said substrate comprises a flexible  
2 material and said signal conductor is partitioned into a plurality of coiled sections that are  
3 arranged such that said substrate can be folded during packaging to stack said coiled  
4 sections.

10. Apparatus as set forth in claim 9 including a plurality of apertures that extend through said substrate and are aligned to couple said signal conductor and said ground plane conductor together.

11. Apparatus as set forth in claim 8 wherein a plurality of said windings are unbounded on two sides by the others of said plurality of windings, and wherein each unbounded winding exhibits a conductor width that is less than the conductor width of the others of said plurality of windings and wherein the spacing of said unbounded windings to the adjoining winding is less than the spacing between the others of said plurality of windings.

12. Delay line apparatus comprising:

a) a signal layer including at least one signal conductor deposited on a first surface of a dielectric substrate, wherein the signal conductor is defined by a plurality of pathways of identical shape that extend in parallel relation to one another, wherein said plurality of pathways are positioned to electrically interact with each other, wherein one of the pathways is unbounded on one side by the others of said plurality of pathways, wherein said unbounded pathway exhibits a conductor width that is less than the conductor width of the others of said plurality of pathways and wherein the spacing of said unbounded pathway to an adjoining one of said plurality of pathways is less than the spacing between the others of said plurality of pathways;

b) a ground plane layer deposited on a second surface of said dielectric substrate to substantially cover the second surface; and

c) termination means for coupling electrical signals to said signal conductor and said ground plane conductor.

1           13. Apparatus as set forth in claim 12 wherein said substrate comprises a flexible  
2 material and said signal conductor is partitioned into a plurality of coiled sections that are  
3 arranged such that said substrate can be folded during packaging to stack said coiled  
4 sections.

1           14. Delay line apparatus comprising:

2           a) a signal layer including at least one signal conductor deposited on a first  
3 surface of a dielectric substrate, wherein the signal conductor is defined by a plurality of  
4 pathways of identical shape that extend in parallel relation to one another, wherein said  
5 plurality of pathways are positioned to electrically interact with each other, wherein one  
6 of the pathways is unbounded on one side by the others of said plurality of pathways, and  
7 wherein the spacing of said unbounded pathway to an adjoining one of said plurality of  
8 pathways is less than the spacing between the others of said plurality of pathways;

9           b) a ground plane layer deposited on a second surface of said dielectric substrate  
10 to substantially cover the second surface; and

11           c) termination means for coupling electrical signals to said signal conductor and  
12 said ground plane conductor.